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# National Animal Health Monitoring System



United States  
Department of  
Agriculture

Animal and  
Plant Health  
Inspection  
Service

Veterinary  
Services

## OHIO REPORT

Summary of Round 1

November 1983 - October 1984

NAHMS



National Animal

NATIONAL



The Ohio Report -  
analyzed by Dr. Fred A  
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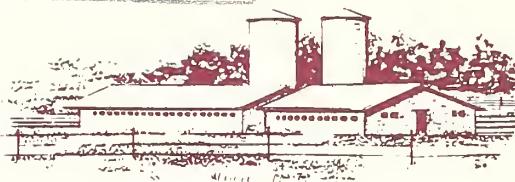
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JAN 17 1992

CATALOGING PREP



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## Introduction

NAHMS, the National Animal Health Monitoring System, is a cooperative State-federal-industry effort to provide statistically sound estimates of the incidence and prevalence of animal health events and their associated costs.

The program converts raw on-farm data into orderly and meaningful information by using epidemiological methods to collect, analyze, and report the results. With appropriate sampling procedures and statistical research analyses, the NAHMS information provides a basis for measuring and documenting data at three different levels: local, State, and National.

A random selection of producers in Ohio would ensure that the animal health events recorded reflect events statewide. The information collected will eventually be combined with that of other States to reflect regional and National animal health trends.

# National Animal Health Monitoring System

## Objectives

The State of Ohio agreed to pilot a system of collecting and analyzing information related to animal health. The objectives of the first round of the program were to:

- *Identify practical and reliable methods of sampling livestock operations that represent the majority of the populations in the State.*
- *Test the standard interview forms in field situations.*
- *Introduce the program to the industries involved to improve cooperation in the future.*
- *Validate the disease reporting system with basic diagnostic procedures.*

## Background

Data were collected for Round 1 in Ohio from November 1983 through October 1984 on three classes of livestock: beef, dairy, and swine. Round 1 was intended as a pilot

program, with the results to be used in planning for Round 2.

## Role of Participants

The NAHMS Coordinator worked with State and Federal Veterinary Medical Officers (VMOs), the Ohio State University, and producers to collect, summarize, and report animal health events. The VMOs gathered information on livestock health events through monthly interviews with the producers. The monthly reports were then summarized to provide the Ohio NAHMS data base. The data collected represents only those herds which participated in the monthly interviews. The results reported cannot be generalized to all livestock herds in Ohio.

## Selection of Producers

Beef, dairy, and swine herds in Ohio were divided by herd size into 8 strata. Producers within the strata were selected based on herd size and the availability of resources. Two beef herds, one dairy herd, and one swine herd were then assigned to each VMO's geographic region from this pool of sampled producers.

## Operations Monitored

A total of 58 livestock operations were monitored during the first round of data collection in Ohio. Records of animal health events were maintained

by 27 beef producers, 16 dairy producers, and 15 swine producers during the 12-month study period.

## Health Events Reported

A health event is any disease or condition reported by a producer that affects the overall health of an animal. Throughout this report, the occurrence and costs of animal health events are classified by the following ten body systems: respiratory, reproductive/urological, gastrointestinal/digestive, environmental/traumatic, generalized/whole body, integumentary, musculoskeletal, metabolic/nutritional, hemic/lymphatic, and miscellaneous/unknown. Not all of the body system classifications are used with each livestock type. Refer to page 25 for the health events reported by body system.

Incidence rates and case fatality rates are used to measure the occurrence and severity of diseases or conditions. The number of new cases reported during the 12-month period

divided by the average exposed population of animals defines the incidence rate. The case fatality rate is the number of deaths from a health event divided by the number of reported cases of that health event.

The economic effects of the health events are based on the estimated costs of prevention, treatment, and animal losses reported by each producer. Prevention costs include the cost of drugs, insecticides, nonveterinary procedures, veterinary costs, and the cost of producer labor to administer preventive measures. Treatment costs include the cost of drugs, veterinary services, and labor. Death losses, losses due to forced culls, and the estimated value of weight lost by the animal because of a health event represent the costs of animal losses.

# National Animal Health Monitoring System

A total of 9,532 health events were reported by the 58 producers. Figure 1 shows the distribution of the health events by livestock type. In the 27 beef operations, 551 health events occurred. The 16 dairy operations reported 1,780 events and 7,201 were identified in the 15 swine operations.

Figure 1  
Health Events Reported

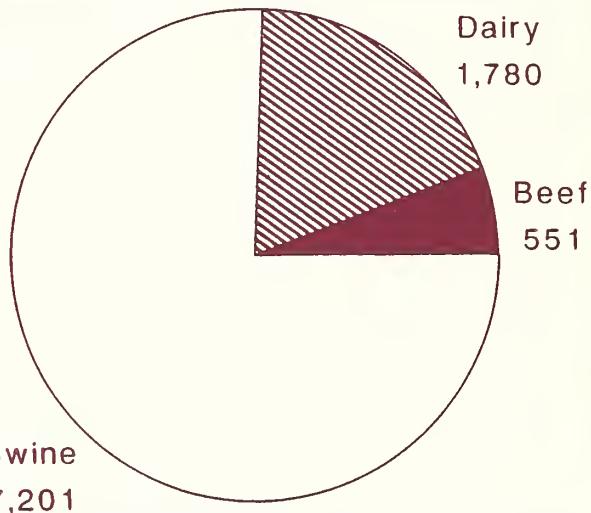
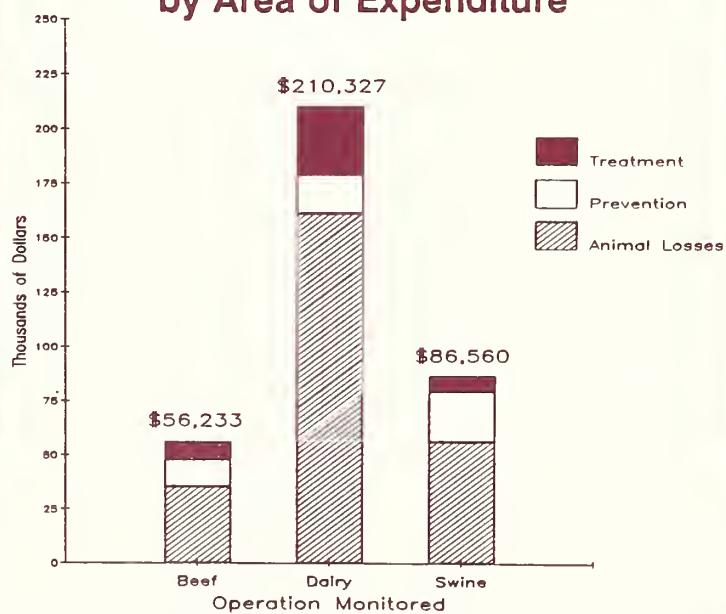


Figure 2  
Total Costs of Health Events  
by Area of Expenditure



The total cost of animal health events for the 58 operations was \$353,120. The costs of animal losses, prevention, and treatment for the beef, dairy, and swine operations are shown in Figure 2. Animal losses accounted for two-thirds or more of the total costs for each operation monitored.

## Beef Operations

Table 1  
Beef Population and Health Events Reported

Beef Category	Population	# Health Events
Cows	1,220 (34.0%)	146 (26.5%)
Young Stock	1,207 (33.6%)	201 (36.5%)
Calves	1,111 (31.0%)	201 (36.5%)
Bulls	49 ( 1.4%)	3 ( 0.5%)
<b>Totals</b>	<b>3,587</b>	<b>551</b>

A total of 27 beef operations were monitored. Table 1 shows the popula-

tion and number of health events reported for each beef category. The 551 health events reported were identified among 3,587 animals. Young stock and calves each experienced a larger proportion of the health events as compared to the population they represented.



# National Animal Health Monitoring System

Table 2  
Incidence of Beef Health Events by Body System

Body System	# Cases	Incidence Rate per 1,000 Animals
Dermatological	129	36.0
Gastrointestinal/Digestive	118	32.9
Reproductive/Urological	111	30.9
Respiratory	104	29.0
Environmental/Traumatic	32	8.9
Miscellaneous/Unknown	26	7.2
Metabolic/Nutritional	16	4.5
Musculoskeletal	8	2.2
Generalized/Whole Body	7	2.0
<b>Total</b>	<b>551</b>	

Table 2 shows that the largest number of health events in beef cattle were reported in the dermatological body system. All 129 cases were due to external parasites.

Of the 118 diseases and conditions recorded in the gastrointestinal/digestive system, 106 (89.8%) were identified as diarrhea.

The 48 cases of dystocia reported contributed 13.4 points to the in-

cidence rate of 30.9 for health events of the reproductive/urological system. This incidence rate means that for every 1,000 beef animals, the producer could expect 30.9 to develop a reproductive/urological disease during a study round.

Pneumonia (44 cases) and non-specific respiratory disease (57 cases) were responsible for 97.1% of the incidence associated with the respiratory system.

Table 3  
**Fatalities in Beef Cattle by Body System**

Body System	# Deaths	Case Fatality Rate (%)
Miscellaneous/Unknown	19	73.1
Respiratory	16	15.4
Environmental/Traumatic	15	46.9
Reproductive/Urological	13	11.7
Metabolic/Nutritional	9	56.3
Gastrointestinal/Digestive	6	5.1
Musculoskeletal	1	12.5
Generalized/Whole Body	1	14.3
<b>Total</b>	<b>80</b>	

As shown in Table 3, a total of 80 deaths occurred among the 3,587 beef cattle monitored.

Of the 19 deaths recorded in the miscellaneous/unknown category, 17 were identified as death, not otherwise specified, one death resulted from thyroid cancer, and one death was attributed to polio. The 73.1% case

fatality rate for miscellaneous/unknown conditions was higher than all other body systems.

Injury caused 9 of the 15 deaths associated with environmental/traumatic causes. The remaining six deaths were from cold exposure. No deaths were reported due to diseases or conditions of the integumentary system.

# National Animal Health Monitoring System

The total costs of animal losses, prevention, and treatment of health events in beef cattle equaled \$56,233. Table 4 shows that diseases and conditions of the reproductive/urological system were the most costly, totaling \$16,407, or 29.2% of the total costs. Dystocia, with a total cost of \$7,590, was the single most expensive health event.

Costs associated with internal parasites accounted for \$3,653 (46%) of the \$7,937 in total costs for the gastrointestinal/digestive system. Death from unknown causes totaled \$4,446 of the cost of deaths in the miscellaneous/unknown body system.

Table 4  
**Costs of Beef Health Events by Body System**

Body System	Total Costs
Reproductive/Urological	\$16,407
Gastrointestinal/Digestive	7,937
Miscellaneous/Unknown	7,842
Respiratory	7,642
Environmental/Traumatic	6,468
Metabolic/Nutritional	3,920
Integumentary	2,867
Musculoskeletal	1,969
Generalized/Whole Body	1,181
<b>Total</b>	<b>\$56,233</b>

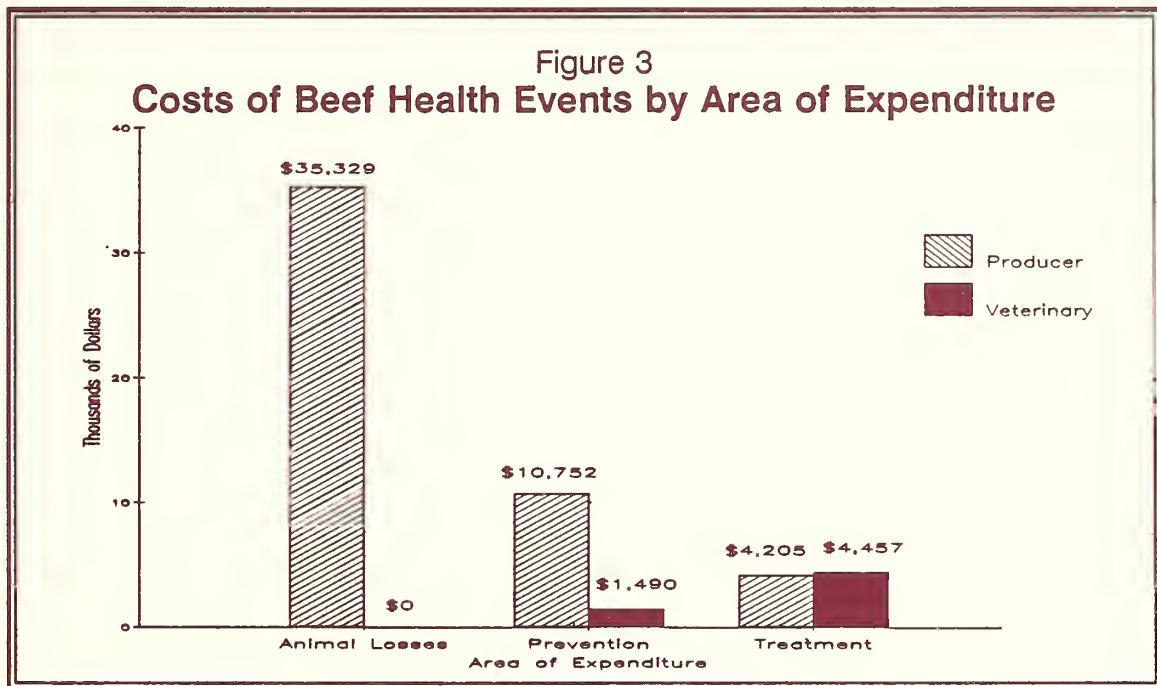


Figure 3 shows that the \$35,329 spent for animal losses represents the largest portion of the total costs of health events in beef cattle (62.7%). Prevention costs totaled \$12,242, of which \$1,490 (12.2%) were veterinary-related expenses. Slightly more than half of the \$4,457 in treatment costs (51.4%) was paid to veterinarians. Overall, producer-related costs equaled \$50,286, or 89.4% of the total costs of health events.

### **Beef Cows**

A total of 146 health events occurred in the 1,220 beef cows monitored. Dystocia was reported most frequently with 48 cases. Infertility ranked second with 13 cases.

A total of 20 cow deaths were reported. The three major causes of death were grass tetany (four deaths), death from unknown causes (four deaths), and dystocia (three deaths).

The costs of treatment and animal losses for health events in beef cows was \$27,697. The largest portion of these costs was associated with diseases and conditions of the reproductive/urological system (\$13,473 or 48.6%). Dystocia was the most expensive health event at \$7,590. Costs of animal losses due to injury was the next most costly condition (\$2,952). The health events with the largest cost per case were thyroid cancer (\$2,070) and grass tetany (\$638).

# National Animal Health Monitoring System

## Young Stock

Weaned animals not yet used for breeding were defined as young stock. The population of beef young stock numbered 1,207. A total of 129 of the 201 health events reported in young stock were listed as external parasites (64.2%). Pneumonia ranked second in frequency with 44 cases and was the only respiratory disease reported.

Only 15 deaths were reported in young stock. Six deaths resulted from pneumonia, another six deaths were due to unknown causes, two deaths were attributed to injury, and one death was from internal parasites.

Costs of animal losses in young stock totaled \$5,137, and treatment costs were \$2,186. The most costly health event was pneumonia (\$3,389). Costs associated with diseases and conditions of the gastrointestinal/digestive system equaled \$821.

Death from unknown causes had the highest cost per case at \$283.

## Calves

A total of 201 health events were identified in 1,111 beef calves. Diarrhea was reported most often (103

cases), and nonspecific respiratory disease ranked second (53 cases).

Ten of the 45 deaths recorded in calves were from nonspecific respiratory disease (22.2%), seven were of unknown origin (15.6%), six were due to cold exposure (13.3%), and six were stillbirths (13.3%). The remaining deaths were due to various causes. The case fatality rate for nonspecific respiratory disease was 18.9%. Cold exposure and injury had higher case fatality rates at 66.7% and 62.5%, respectively.

Nonspecific respiratory disease was also the most costly condition in calves (\$2,497) accounting for 30% of the costs of treatment and animal losses (\$8,320). Costs associated with injury totaled \$1,633, and white muscle disease costs were \$1,134. The health event with the highest cost per case in calves was black leg. Only one case of black leg was reported at a cost of \$300.

## Bulls

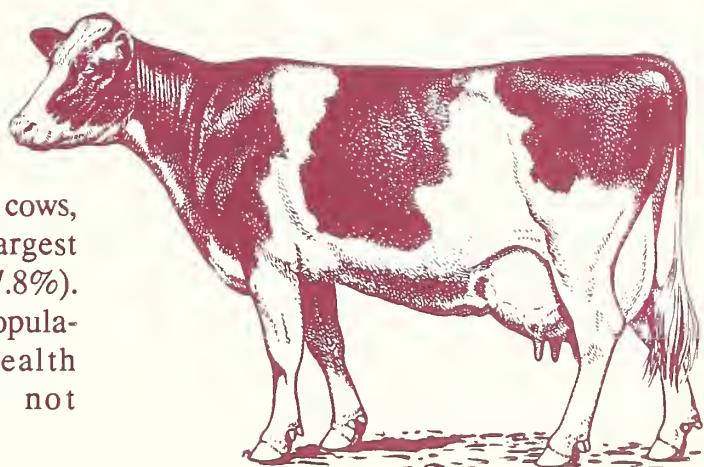
Only three health events were reported in the 49 beef bulls monitored. Two injuries and one case of pericarditis occurred, none of which resulted in death. The costs of treatment for these conditions totaled \$651.

## Dairy Operations

Table 5  
Dairy Population and Health Events Reported

Dairy Category	Population	# Health Events
Cows	1,263 (47.8%)	960 (53.9%)
Young Stock	1,006 (38.1%)	324 (18.2%)
Calves	371 (14.1%)	496 (27.9%)
<b>Totals</b>	<b>2,640</b>	<b>1,780</b>

Table 5 shows that a population of 2,640 dairy cattle was monitored and 1,780 health events were reported by producers. The largest number of health events were recorded in cows, and cows also comprised the largest percentage of the population (47.8%). Young stock ranked second in population, but last in associated health events. Dairy bulls were not monitored during Round 1.



# National Animal Health Monitoring System

Table 6  
Incidence of Dairy Health Events by Body System

Body System	# Cases	Incidence Rate per 1,000 Animals
Reproductive/Urological	593	224.6
Respiratory	494	187.1
Gastrointestinal/Digestive	199	75.4
Integumentary	183	69.3
Miscellaneous/Unknown	154	58.3
Environmental/Traumatic	72	27.3
Generalized/Whole Body	35	13.3
Musculoskeletal	31	11.7
Metabolic/Nutritional	19	7.2
<b>Total</b>	<b>1,780</b>	

Table 6 shows that a total of 593 health events were associated with the reproductive/urological system. Metritis accounted for 213 of the reproductive cases (35.9%) and had an incidence rate of 80.7 per 1,000 animals. This means that for every 1,000 dairy animals 80.7 cases of metritis would be expected to occur during a round. Infertility, mastitis, and cystic follicles were also important reproductive health events. The in-

cidence rate for infertility was 34.1; mastitis and cystic follicles each had an incidence rate of 20.

Health events of the respiratory system ranked second in frequency. The 491 reported cases of pneumonia resulted in an incidence rate of 186 cases per 1,000 animals per year, comprising almost the entire incidence for this body system.

Table 7  
**Fatalities in Dairy Cattle by Body System**

Body System	# Deaths	Case Fatality Rate (%)
Respiratory	77	15.6
Reproductive/Urological	47	7.9
Miscellaneous/Unknown	24	15.6
Gastrointestinal/Digestive	23	11.6
Generalized/Whole Body	10	28.6
Environmental/Traumatic	3	4.2
Metabolic/Nutritional	2	10.5
<b>Total</b>	<b>186</b>	

A total of 186 deaths were recorded in dairy cattle. Table 7 shows that the largest number of deaths occurred in the respiratory system. Pneumonia was responsible for 73 of the 77 deaths reported.

Health events of the reproductive/urological system ranked second in fatalities. The 33 stillbirths reported

accounted for 73.3% of all reproductive deaths.

Generalized/whole body conditions had the highest case fatality rate, with 10 of the 35 cases resulting in death. Nine of the 10 deaths were identified as disease, not otherwise specified; the remaining fatality was due to an allergic reaction.

# National Animal Health Monitoring System

Table 8  
**Costs of Dairy Health Events by Body System**

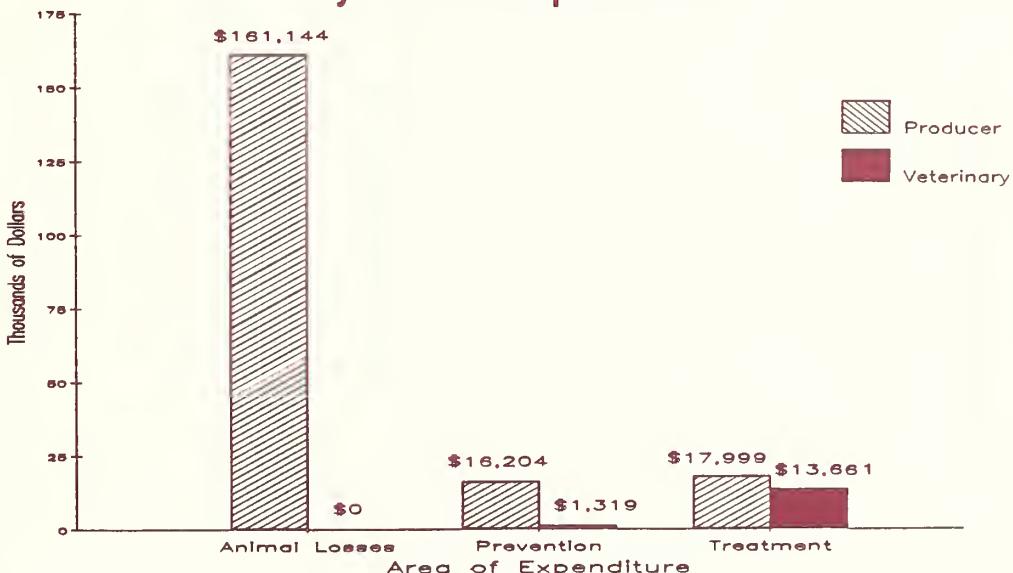
Body System	Total Costs
Reproductive/Urological	\$124,676
Respiratory	26,727
Gastrointestinal/Digestive	24,250
Miscellaneous/Unknown	13,559
Environmental/Traumatic	7,763
Generalized/Whole Body	5,408
Musculoskeletal	4,923
Metabolic/Nutritional	1,973
Integumentary	1,048
<b>Total</b>	<b>\$210,327</b>

The total costs of prevention, treatment, and animal losses in dairy cattle equaled \$210,327. As shown in Table 8, the largest portion of the total costs, \$124,676 (59.3%), was reported for health events of the reproductive/urological system. The two largest contributors to diseases and conditions of this body system were mastitis and infertility. Mastitis costs totaled

\$63,808, and infertility costs amounted to \$25,179.

Costs for pneumonia totaled \$21,406 representing 80.1% of the total costs associated with health events of the respiratory system. The most costly gastrointestinal condition was displaced abomasum (\$8,296).

Figure 4  
**Costs of Dairy Health Events  
 by Area of Expenditure**



In addition to the costs associated with death, culling losses, and value of weight loss, animal losses in dairy cattle included the costs attributed to decreased milk production. Figure 4 shows that the costs of animal losses totaled \$161,144, or 76.6% of the total costs of health events in dairy cattle.

Dairy producers paid \$14,980, or 7.1% of the total costs of health events, to veterinarians for prevention and treatment services. Prevention costs totaled \$17,523, of which only \$1,319 (7.5%) were veterinary-related. The highest prevention costs were recorded for pneumonia (\$6,527).

Treatment costs accounted for 15.1% of the total costs. Of the \$31,660 spent for the treatment of health events, \$13,661 (43.1%) was paid to veterinarians. Mastitis had the highest treatment costs at \$9,450.

### Dairy Cows

A total of 960 diseases or conditions were reported in 1,263 dairy cows. The most frequently identified health events were those of the reproductive/urological system. Of the 593 events attributed to this body system, 213 were reported as metritis (35.9%), and 90 cases were reported as infertility (15.2%).

# National Animal Health Monitoring System

A total of 41 deaths were identified in the dairy cows monitored. Six of the 14 deaths associated with the reproductive/urological system were caused by mastitis. Eight fatalities were reported in dairy cows as death, not otherwise specified.

Costs for treatment and animal losses totaled \$171,782. Mastitis and infertility were the most expensive conditions, with costs of \$61,527 and \$25,012, respectively. Veterinary-related expenses equaled \$13,079, or 48.5% of the total treatment costs. Health events with the highest cost per case were heart failure (one case at a cost of \$1,719) and IBR/BVD (\$1,480 per case).

## Young Stock

A total of 324 health events were identified among 1,006 dairy young stock. Pneumonia was the most frequently reported condition, with 140 cases, followed by 95 cases of external parasites.

Of the 25 deaths reported in young stock, 14 (56%) were caused by pneumonia, and 5 (20%) were recorded as death, not otherwise specified. Bloat resulted in two deaths, and one death each was attributed to the following health events: injury, diarrhea, rickets, and listerosis.

Costs of treatment and animal losses in young stock equaled \$9,684. Veterinary-related treatment costs totaled \$163, or 11.2% of the \$1,453 in treatment expenses. Pneumonia was the single most costly health event in young stock (\$4,224). Injuries were the most expensive on a cost per case basis. A total of three injuries occurred with an average expense of \$648 per case.

## Calves

A total of 496 diseases or conditions were reported among the 371 dairy calves monitored. Pneumonia enteritis complex, and pneumonia, not otherwise specified, together accounted for 309 cases (62.3%). These two diseases also caused 57 of the 120 recorded calf fatalities (47.5%).

The costs of calf losses totaled \$8,124, and treatment costs were \$3,214. A total of \$6,647 was paid by producers for treatment and animal losses associated with pneumonia enteritis complex and pneumonia, not otherwise specified. Of this amount, only \$194 (2.9%) was for veterinary-related costs. The \$100 spent for one fatality due to cold exposure was the most costly health event on a per case basis.

## Swine Operations

Table 9 lists the population of animals monitored and health events reported in the swine category. A total of 7,201

diseases and conditions were identified among a total population of 20,029 swine. Nursing piglets were the most numerous, but the largest proportion of health events (44%) occurred in growing/finishing pigs.

Table 10 shows that 3,168 (44%) of the 7,201 swine health events occurred

Table 9  
**Swine Population and Health Events Reported**

Swine Category	Population	# Health Events
Nursing Piglets	9,885 (49.4%)	2,851 (39.6%)
Growing/Finishing Pigs	9,523 (47.5%)	3,166 (44.0%)
Sows	584 (2.9%)	1,180 (16.4%)
Boars	37 (0.2%)	4 (<0.1%)
<b>Totals</b>	<b>20,029</b>	<b>7,201</b>

in the gastrointestinal/digestive system. Of this total, 1,620 health events were attributed to diarrhea (51.9%), and 818 to swine dysentery (25.8%). The incidence rate for diarrhea was 80.9. In other words, for every 1,000 swine the producer could expect 80.9 of them to acquire diarrhea during the study period.

Table 10  
**Incidence of Swine Health Events by Body System**

Body System	# Cases	Incidence Rate per 1,000 Animals
Gastrointestinal/Digestive	3,168	158.2
Respiratory	1,573	78.5
Reproductive/Urological	1,125	56.2
Generalized/Whole Body	710	35.4
Miscellaneous/Unknown	504	25.2
Environmental/Traumatic	105	5.2
Metabolic/Nutritional	16	0.8
<b>Total</b>	<b>7,201</b>	

Pneumonia was responsible for 1,526 (97%) of the 1,573 cases in the respiratory system, and had an incidence rate of 76.2. Atrophic rhinitis (47 cases) was the only other respiratory condition reported.

# National Animal Health Monitoring System

Table 11  
Fatalities in Swine by Body System

Body System	# Deaths	Case Fatality Rate (%)
Reproductive/Urological	1,026	91.2
Gastrointestinal/Digestive	438	13.8
Miscellaneous/Unknown	247	49.0
Generalized/Whole Body	165	23.2
Environmental/Traumatic	98	93.3
Respiratory	64	4.1
Metabolic/Nutritional	16	100.0
<b>Total</b>	<b>2,054</b>	



The largest number of swine deaths were recorded for the reproductive/urolological system, as shown in

Table 11. Stillbirths (459 deaths) and overlays (449 deaths) together accounted for 88.5% of the 1,026 fatalities attributed to this body system.

A 100% case fatality rate occurred for health events of metabolic/nutritional origin. All 16 deaths were from starvation. Health events associated with environmental/traumatic conditions had a case fatality rate of 93.3%. Cold exposure was responsible for 67 of the 98 reported deaths (68.4%).

Table 12  
**Costs of Swine Health Events by Body System**

Body System	Total Costs
Respiratory	\$23,633
Gastrointestinal/Digestive	22,826
Reproductive/Urological	13,420
Miscellaneous/Unknown	12,655
Environmental/Traumatic	5,328
Generalized/Whole Body	5,584
Hemic/Lymphatic	1,515
Integumentary	1,379
Metabolic/Nutritional	220
<b>Total</b>	<b>\$86,560</b>

Table 12 shows that the total cost of prevention, treatment, and animal losses in swine amounted to \$86,560. Prevention costs were the only area of expenditure associated with the integumentary and hemic/lymphatic systems. No cases of illness were reported in either of these body systems; therefore, the categories are not listed in the preceding tables of swine data.

Health events of the respiratory system recorded the highest total costs. Pneumonia costs equaled \$20,396, accounting for 86.3% of the total cost of respiratory events. Of the \$22,826 in expenditures associated with the gastrointestinal/digestive system, \$8,305 (36.4%) was spent on diarrhea, and \$7,722 (33.8%) was spent on swine dysentery. Death, not otherwise specified was the most expensive condition in the miscellaneous/unknown category with a cost of \$11,378.

# National Animal Health Monitoring System

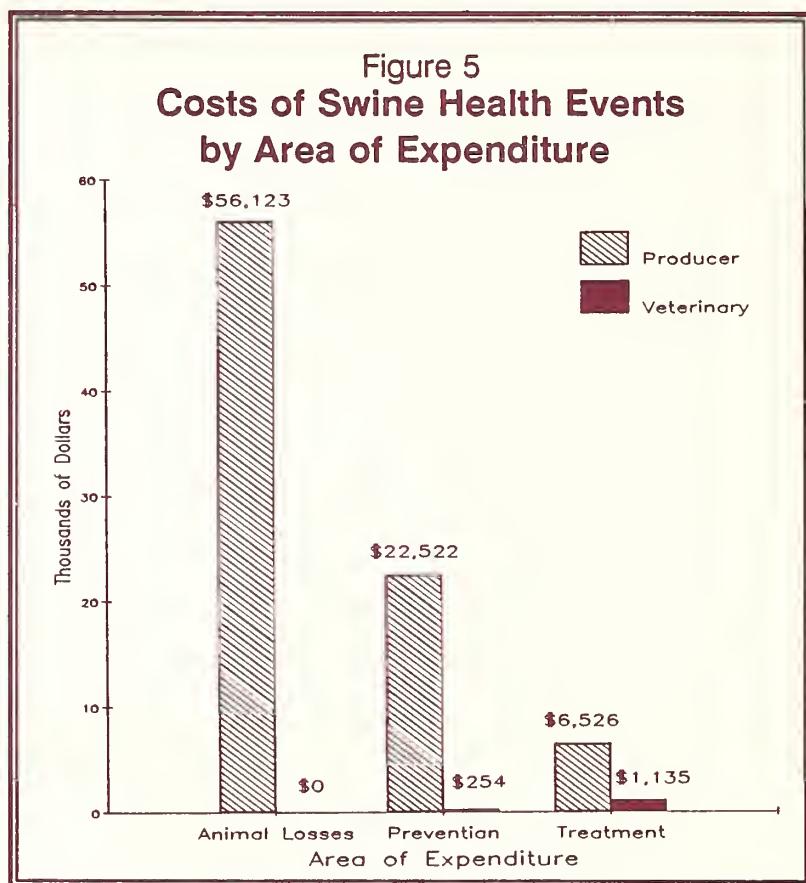
The costs of animal losses, prevention, and treatment of swine diseases and conditions are shown in Figure 5. Animal losses totaled \$56,123, representing 65.9% of the total costs to producers. The \$85,171 in producer costs accounted for 98.4% of the total costs of swine health events.

Only \$254 (1.1%) of the \$22,776 in prevention costs were veterinary-related expenses. The treatment of swine health events equaled \$7,661, of which \$1,135 (14.8%) was paid to veterinarians.

## Sows

A total of 1,180 health events occurred in 584 sows. Diseases and conditions of the reproductive/urological system were the most frequent. Of the 1,125 health events reported in this body system, 459 were stillbirths (40.8%), and 449 were overlays (39.9%).

A total of 24 sows died during the study period. Half of the deaths were not attributed to a specific cause. Heat



exhaustion killed four sows, pneumonia caused three deaths, and one fatality each was due to injury, abortion, dystocia, uterine prolapse, and MMA.

The costs of treatment and animal losses for sow health events equaled \$16,374 with animal loss expenditures accounting for 95.8% of this total. Diseases and conditions of the reproductive/urological system were the most expensive (\$12,728). Overlaying was the single most costly condition, at \$4,757, and stillbirths ranked second (\$4,273). Heat exhaustion had the highest cost per case (\$199) followed by abortion (\$163).

### Nursing Piglets

The total population of nursing piglets was 9,885. Most of the 2,851 health events reported in piglets occurred in the gastrointestinal/digestive system. Of the 2,114 gastrointestinal events identified, 1,434 were attributed to diarrhea (67.8%), and 448 cases were recorded as colibacillosis (21.2%).

Nursing piglet deaths numbered 1,590. A total of 948 deaths (59.6%) were associated with the reproductive/urological system of the sow. The frequency of stillbirths and overlays was mentioned previously in the Sows Section. Developmental defects and mummified fetuses accounted for 20 piglet deaths each.

The costs of piglet losses totaled \$9,623, and treatment costs were \$1,720. The most costly health events in nursing piglets were diarrhea (\$3,254) and colibacillosis (\$2,023). These two illnesses represented 75.3% of the costs associated with the gastrointestinal/digestive body system, but the cost per case for each condition was low (\$2 for diarrhea and \$4 for colibacillosis). Atrophic rhinitis was the most costly piglet health event on a per case basis at \$19.

### Growing/Finishing Pigs

A total of 3,166 health events were reported in 9,523 growing/finishing pigs. Pneumonia was the most fre-

quently identified illness accounting for 1,316 of 1,349 respiratory cases (97.6%).

Diseases and conditions of the gastrointestinal/digestive system were the most severe. Of the 369 total deaths, 119 occurred in this body system (32.2%). All 12 cases of edema disease ended in death. The 23 cases of rectal prolapse resulted in 15 deaths giving a case fatality rate of 65.2%. Swine dysentery caused 84 pig deaths, and the remaining 8 gastrointestinal deaths were attributed to diarrhea.

The costs of animal losses and treatment for growing/finishing pigs equaled \$33,618. Expenditures for animal losses represented 85.7% of this total (\$28,797). Health events of the respiratory system were the most expensive. Of the \$12,194 incurred by this body system, \$10,387 (85.2%) was attributed to pneumonia. Death, not otherwise specified was the second most costly condition with total expenses equaling \$8,701. As in sows, heat exhaustion had the highest cost per case in growing/finishing pigs at \$95.

### Boars

Only 4 health events occurred among the 37 boars monitored. Two injuries, one case of pneumonia, and one death, not otherwise specified, were the conditions reported. The costs of treatment and animal losses for boars was \$2,451, with injuries accounting for 89.7% of the total expenditures.

# National Animal Health Monitoring System

## Summary

### **Beef Operations**

Disease incidence was relatively low among the 27 beef operations. Health events of the integumentary system were reported most often with all cases attributed to external parasites. Of the 80 total deaths among beef cattle, 17 were not attributed to a specific cause.

Costs associated with animal losses represented 62.8% of the total costs of beef health events. Veterinary-related costs accounted for 51.4% of the total treatment costs, but only 12.2% of the total prevention costs. Beef producers paid 10.6% of their total costs (prevention, treatment, and animal losses) to veterinarians.

The average total cost per beef health event was \$102. Diseases and conditions of the reproductive/urological system were the most costly with the highest total costs recorded for dystocia.

### **Dairy Operations**

Reproductive/urological health events occurred most frequently in the 16 dairy operations and had the highest associated total costs. Metritis was reported most often, but mastitis was

the most costly condition. Diseases and conditions of the respiratory system caused 41.4% of all deaths with 73 of the 186 total fatalities attributed to pneumonia.

Animal losses accounted for 76.6% of the total costs of dairy health events. Unlike the beef and swine operations, treatment costs exceeded prevention costs for dairy producers. Veterinary-related costs represented 7.5% and 43.1% of the costs of prevention and treatment, respectively. Expenses paid by dairy producers to veterinarians represented only 7.1% of the total costs of prevention, treatment, and animal losses. The average total cost per dairy health event was \$118.

### **Swine Operations**

Diseases and conditions of the gastrointestinal/digestive system were reported most often by the 15 participating swine producers. Diarrhea and swine dysentery occurred with the highest frequency. Nearly half of the 2,054 swine deaths were attributed to the reproductive/urological system. Stillbirths accounted for 459 of the fatalities.

Health events of the respiratory system were the most expensive for swine producers. Pneumonia was the single most costly disease.

As in the beef and dairy operations, animal losses represented the largest portion of total swine costs (64.8%).

Veterinary-related expenses accounted for only 1.6% of the total costs of prevention, treatment, and animal losses. Only 1.1% of all prevention costs, and 14.8% of all treatment expenditures were paid to veterinarians. The cost of each swine health event was, on the average, \$8.



The data in this report should be carefully interpreted, and conclusions drawn from the information limited, due to the small sample size and variation in the methods of collecting information.

# National Animal Health Monitoring System

## Glossary

**Animal health event:** Any condition or disease that affects the overall health of an animal.

**Animal losses:** Costs attributed directly to the death or culling of an animal, weight loss, and milk reduction due to a health event.

**APHIS:** Animal and Plant Health Inspection Service.

**AVIC:** Area Veterinarian in Charge.

**Body systems:**

Environmental/Traumatic - pertaining to conditions caused by environmental exposure or injury.

Gastrointestinal/Digestive - pertaining to the esophagus, stomach, intestines, liver, and pancreas.

Generalized/Whole body - body as a whole.

Hemic/Lymphatic - pertaining to the blood, spleen, and lymph nodes.

Integumentary - pertaining to the skin and hooves.

Metabolic/Nutritional - pertaining to disorders in which there is interference with the normal processing of substances by the body.

Miscellaneous/Unknown - all systems, not otherwise specified.

Musculoskeletal - pertaining to the muscles, bones, joints, cartilages, and ligaments.

Reproductive/Urological - pertaining to the male and female reproductive organs, kidney, bladder, and fetus.

Respiratory - pertaining to those organs and structures involved in the act of breathing, i.e., lungs, trachea.

**Calf:** In cattle, the period of time from birth until weaning.

**Case fatality rate:** The proportion of a population contracting a disease that die of that disease. The number of deaths from a specific disease divided by the total number of cases of that disease during a specified time period.

**Cow:** An adult female of cattle that has calved.

**Cull:** To remove an animal because of a health event.

**Environmental (causes of diseases):** Pertains to cold exposure, heat exhaustion, accidents, lightning, and electricity.

**Incidence rate:** A measure of the frequency with which new animal health events occur. The incidence rate is the total number of new occurrences of a disease divided by the total average exposed and susceptible population during a specified time period.

**Livestock type:** A division of domestic animals by product derived, i.e., beef cattle, dairy cattle, sheep, swine.

**NAHMS:** National Animal Health Monitoring System.

**Operation:** In NAHMS application, a farm or ranch that is participating in the NAHMS survey program.

**Prevention costs:** Costs incurred for prevention of disease or related conditions, including the cost of drugs, vaccines, and labor as well as foot baths, minerals, and other types of supplies.

**Preventive measures:** Any acts performed for the purpose of avoiding disease or related conditions.

**Producer:** In NAHMS usage, the rancher or farmer who reports to a VMO on animal health events.

**Reproductive (diseases):** Includes dystocia, abortion, MMA, and mastitis.

**Round:** The specific period during which NAHMS conducts a survey of chosen producers to gather information on animal health events.

**Swine:** An ungulate mammal of the family Suidae. In NAHMS usage, includes the pig, hog, and boar.

**Treatment costs:** Costs incurred for the treatment of a health event, including the cost of drugs, labor, and veterinary service.

**USDA:** United States Department of Agriculture.

**Veterinary Costs:** Costs charged by a veterinarian for service.

**VMO:** Veterinary Medical Officer.

**VS:** Veterinary Services.

**Young stock:** The period of an animal's life from weaning until its first use as breeding stock.



## Health Events by Body System

### Environmental/Traumatic

Cold exposure  
Heat exhaustion  
Injury

### Gastrointestinal/Digestive

Bloat  
Coccidiosis  
Collibacillosis  
Diarrhea  
Digestive disturbance  
Displaced abomasum  
Edema disease  
Hardware disease  
Internal parasites  
Rectal prolapse  
Swine dysentery  
TGE

### Generalized/Whole Body

Allergic reaction  
Disease, NOS  
Infection  
Influenza  
Leptospirosis  
Retarded growth  
Salmonella

### Hemic/Lymphatic

Anemia

### Integumentary

Erysipelas  
External parasites  
Ringworm

### Metabolic/Nutritional

Grass tetany  
Ketosis  
Rickets  
Starvation  
White muscle disease

### Miscellaneous/Unknown

Death, not otherwise specified  
Eye cancer  
Heart failure  
Listerosis  
Lump jaw  
Miscellaneous disease  
Navel ill  
Pericarditis  
Pinkeye  
Polio  
Thyroid cancer  
Unknown

### Musculoskeletal

Black leg  
Foot rot  
Lameness

### Reproductive/Urological

Abortion  
Brucellosis  
Calving paralysis  
Cystic follicle  
Developmental defect  
Downer cow

Dystocia  
Edematous udder  
Infertility  
Johne's disease  
Mastitis  
Metritis  
Milk fever  
Mismating  
MMA  
Mummified fetus  
Nonpregnant  
Overlay  
Poor mother  
Prolapsed uterus  
Prolapsed vagina  
Prolonged gestation  
Retained placenta  
Stillbirth  
Teat chap

### Respiratory

Atrophic rhinitis  
IBR/BVD  
Lungworms  
Pneumonia  
Respiratory disease

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# National Animal Health Monitoring System



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November 1988